

### REMARKS

By the *Office Action* of 13 November 2003, Paper No. 13, Claims 1-19 and 36-51 are pending in the Application, all the pending Claims being rejected. By the present *Response and Amendment*, the Applicant amends Claims 1, 7-19 and 36-51, and leaves unchanged the remaining pending Claims. No new matter is believed introduced by the present *Response and Amendment*. It is respectfully submitted that the present Application is in condition for allowance for the following reasons.

**1. US Patent No. 3,672,951 to Moore et al.**

Moore et al. discloses a site-built roofing structure, built layer-upon-layer at the construction zone. The present invention is novel and non-obvious over Moore et al. and the combination of the references, as the presently claimed invention incorporates one or more of the following novel and non-obvious features:

- Prefabrication;
- Cementitious construction;
- An impervious membrane that allows water vapor to pass therethrough.

Moore et al. *teaches away* from the above features, and thus cannot be combined with the other cited prior art without changing the very essence of the disclosures. Nonetheless, Moore et al. is non-analogous art, as the reference is neither in the field of Applicant's endeavor, nor, reasonably pertinent to the particular problem with which the Applicant was concerned. Further, there is no suggestion in the prior art to combine the references. Even if Moore et al. is so combined with the prior art as suggested by the Examiner, the combination does not disclose all the elements recited in the Claims as presently pending.

The Claims are amended to further distance the present invention from the unrelated roofing structure of Moore et al.

**2. The Pending Claims**

Claim 1 is amended to recite that the construction element is *prefabricated*, not only in the preamble, but also as a recited limitation. It is respectfully submitted that the combination of references does not disclose a prefabricated backerboard as recited in Claim 1, and the dependent Claims 2-7 and 36-44.

As disclosed in the *Specification*, conventional backerboards have the limitation that for backerboards to work effectively, they must be built/completed on-site, a limitation in the art the present invention overcomes:

For example, it is generally recommended by backerboard manufactures, and required by most building codes, to use an additional impervious moisture barrier behind the backerboard. *Thus, contractors are forced to install the backerboard and separate moisture barrier in the field, at the construction site. Specification, Page 1, Lines 24-28. (emphasis added).*

The present backerboard is prefabricated - delivered to the site ready for installation without further touch up:

It is evident from the prior art that an improved backerboard and method of constructing such an improved backerboard is needed. It can be seen that there is a need for a backerboard having at least one waterproof surface that can be delivered *ready-made to the construction site*, and a method for producing such a backerboard without resort to a carrier sheet. *Specification, Page 2, Lines 14-17. (emphasis added).*

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The present backerboard construction *eliminates the prior art necessity of the on-the-construction-site application of a moisture barrier behind the backerboard*. It exhibits all of the structural, bonding and workability properties of conventional backerboards, and provides advanced water resistance. *Specification, Page 3, Lines 2-5. (emphasis added).*

Thus, Claims 1-7 and 36-44 are novel and non-obvious over the cited prior art, and the amendment to these Claims have antecedent basis in the *Specification* as originally filed.

Claim 8 is amended to recite that the present invention is a *cementitious panel*, having features not found in the combination of Mathieu and Dinkel. The additional of Moore et al. does not cure the lack of a *prima facie* case of obviousness in that Moore et al. teaches away from the use of cement in its roofing element. It is respectfully submitted that the combination of references does not disclose a cementitious panel as recited in Claim 8, and the dependent Claims 9-13, and the amendment to these Claims have antecedent basis in the *Specification* as originally filed.

Claim 14 is amended to recite that the present invention is a *prefabricated cementitious panel*, and includes an impervious membrane that *enables water vapor to pass therethrough*, and for the reasons above, and below, is novel and non-obvious over the cited art.

Moore et al. does not teach or suggest the recited "impervious membrane" of the claimed invention. The Examiner alleges that the presence of an "adhesive vapor barrier" membrane called out in Moore et al. reads on the presently recited "impervious membrane" limitation.

Yet, the adhesive vapor barrier membrane of Moore et al. is significantly different than the impervious membrane of the Claims. The impervious membrane of the present invention is *not* a vapor barrier. In fact, the *Specification* states:

It should be noted that as used herein the term "pervious" defines a property of a material, that property enabling free water to penetrate through a material, and that the term "impervious" defines a property of a material, that property being highly resistant against enabling free water to penetrate through a material. *An impervious material may enable water vapor to penetrate through the material. Specification, Page 4, Lines 4-8 (Emphasis added)*

Thus the impervious membrane of the present invention is not a vapor barrier because it may enable vapor to penetrate through the membrane material. Moore et al. does not teach the use of the same membrane.

Further, Moore et al. discloses:

An adhesive layer 16 is affixed to the first or upper face 12 of the roof deck. The adhesive layer 16 beneficially is a single layer of asphalt or mastic, or alternately is a vapor barrier membrane built up of alternating layers of asphalt or bitumen and paper. *Col. 2, Lines 34-39.*

The impervious membrane of the present invention *is not and cannot be* a layer with adhesive on its lower surface. This would cause the membrane to adhere to the conveyor belt or form on which the backerboard is manufactured. As disclosed in the *Specification*:

The present method of constructing the backerboard *dispenses with the prior art requirement of a carrier sheet or web.* In a preferred embodiment of the invention, the panel is manufactured by the concurrent steps of running a continuous pervious reinforcement web through a web coating bath and then removing excess bath therefrom, and running a continuous impervious reinforcement web through a set of pinch rollers and atop a conveyor belt. *Specification, Page 3, Lines 6-10. (emphasis added).*

Thus, the very benefit of the invention, the manufacturing of the backerboard *without a carrier sheet or web* would be lost if an adhesive vapor barrier was used as an impervious membrane for the present invention.

Additionally, Moore et al. teaches the use of two membranes in the roof structure. The first adhesive vapor barrier membrane 16 is found adhered to both the roof deck 11 and the lower

surface of the insulating foam layer 19 (*See Col 34, Lines 34-40*). The second built-up water barrier formed of bitumen, asphalt or pitch and roofing paper is found adhered to the upper surface of the foam layer (*See Col 2, lines 44-53*).

The present invention recites that one membrane 34 can be adhered to the lower surface of the core 22. Thus, Moore et al. teaches that two membranes are required when a vapor barrier membrane is used on the lower surface of the foam layer. Moore et al. simply does not teach that only one impervious membrane can be used.

It is respectfully submitted that the combination of references does not disclose a prefabricated cementitious panel and impervious membrane as recited in Claim 14, and the dependent Claims 15-19, and the amendment to these Claims have antecedent basis in the *Specification* as originally filed.

Claims 45-51 recite at least one of the novel and non-obvious features above, and are thus believed novel and non-obvious over the combination of references.

#### 4. Claims Rejections under 35 U.S.C. § 103

Claims 1, 8, 13-16, 18, and 41-44 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mathieu (0000738) in view of Moore et al. and Dinkel (3284980). Applicant respectfully traverses this ground of rejection.

Applicant respectfully submits that Moore et al. is not combinable with the other references, as Moore et al. teaches away from the teachings of the other references, and from the present invention, and is non-analogous art. Even if the references can be combined, the combination of references do not establish a *prima facie* case of obviousness as the Claims are presently amended, as fully discussed above.

Moore et al. is not within the scope of concrete panels or related backerboards. The subject matter of the present invention, Dinkel, and Mathieu is prefabricated concrete backerboards or panels used as a substrate on floors, walls, and ceilings for setting various tile like materials. Moore et al. pertains only to a built-up roof structure fabricated at the construction site.

It is unreasonable to assume one having ordinary skill in manufacturing or installing concrete backerboards would also be skilled in the profession of installing built-up roof structures. For example, while the present invention is a construction element for use after its manufacture as a backerboard, Moore et al. teaches a roof structure that is built on-site with

various construction elements. For obvious reasons, it would be impossible to use a roof structure as a backerboard after its manufacture.

The present invention further recites the use of a cement core 22 with one or more reinforcement layers 34 and 28, bonded to the major surfaces. Moore et al. proposes no cement core, nor does it propose a reinforcement layer. To alter the Moore et al. reference to include the presently recited core and/or reinforcement layer would change the very essence of the Moore et al. roof element, and thus it is not possible to combine Moore et al. with the other cited references.

Further, Moore et al. teaches the use, and necessity, of a supporting deck to have the roofing element built upon. The present invention requires no such support structure or decking. As Moore et al. proposes a support member 14, and a roof deck 11, which are required to support the foam board insulation, to alter Moore et al. into a backerboard is not possible, as it requires the decking structure.

It appears the Examiner simply combines the backerboard panels of Mathieu and Dinkel with an unrelated, site-built roofing element of Moore et al. to find all the limitations of the present invention. Yet, no one in the backerboard art would look to the roofing structure of Moore et al. "[T]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. .... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). See also *In re Sneed*, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed. Cir. 1983) ("[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review."); and *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973) ("Combining the teachings of references does not involve an ability to combine their specific structures.").

The Examiner in this case must determine what is "analogous prior art" for the purpose of analyzing the obviousness of the subject matter at issue. "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992) ("A reference is reasonably

pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem."); and *Wang Laboratories Inc. v. Toshiba Corp.*, 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993).

Moore et al. is not within the field of the present invention, and simply is not reasonably pertinent to the problems of conventional backerboards, that being, among others, the lack of an impervious membrane, and the provision of prefabricated panels that are ready-made when delivered to the construction site. A person of ordinary skill, seeking to solve these problems, would not reasonably be expected or motivated to look to site-built roofing elements like those in Moore et al.

While Patent Office classification of references and the cross-references in the official search notes are some evidence of "nonanalogy" or "analogy" respectively, the court has found "the similarities and differences in structure and function of the inventions to carry far greater weight." *In re Ellis*, 476 F.2d 1370, 1372, 177 USPQ 526, 527 (CCPA 1973) (The structural similarities and functional overlap between the structural gratings shown by one reference and the shoe scrapers of the type shown by another reference were readily apparent, and therefore the arts to which the reference patents belonged were reasonably pertinent to the art with which appellant's invention dealt (pedestrian floor gratings).); *In re Clay*, 966 F.2d 656, 23 USPQ2d 1058 (Fed. Cir. 1992) (Claims were directed to a process for storing a refined liquid hydrocarbon product in a storage tank having a dead volume between the tank bottom and its outlet port wherein a gelled solution filled the tank's dead volume to prevent loss of stored product while preventing contamination. One of the references relied upon disclosed a process for reducing the permeability of natural underground hydrocarbon bearing formations using a gel similar to that of applicant to improve oil production. The court disagreed with the PTO's argument that the reference and claimed inventions were part of the same endeavor, "maximizing withdrawal of petroleum stored in petroleum reserves," and found that the inventions involved different fields of endeavor since the reference taught the use of the gel in a different structure for a different purpose under different temperature and pressure conditions, and since the application related to *storage* of liquid hydrocarbons rather than *extraction* of crude petroleum. The court also found the reference was not reasonably pertinent to the problem with which the inventor was concerned because a person having ordinary skill in the art would not reasonably have expected to solve the

problem of dead volume in tanks for refined petroleum by considering a reference dealing with plugging underground formation anomalies.).

For example, *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992) (Applicant claimed an improvement in a hose clamp which differed from the prior art in the presence of a preassembly "hook" which maintained the preassembly condition of the clamp and disengaged automatically when the clamp was tightened. The Board relied upon a reference which disclosed a hook and eye fastener for use in garments, reasoning that all hooking problems are analogous. The court held the reference was not within the field of applicant's endeavor, and was not reasonably pertinent to the particular problem with which the inventor was concerned because it had not been shown that a person of ordinary skill, seeking to solve a problem of fastening a hose clamp, would reasonably be expected or motivated to look to fasteners for garments. The Commissioner further argued in the brief on appeal that a disengageable catch is a common everyday mechanical concept, however the court held that the Commissioner did not explain why a "catch" of unstated structure is such a concept, and why it would have made the claimed invention obvious.). Compare *Stevenson v. International Trade Comm.*, 612 F.2d 546, 550, 204 USPQ 276, 280 (CCPA 1979) ("In a simple mechanical invention a broad spectrum of prior art must be explored and it is reasonable to permit inquiry into other areas where one of ordinary skill in the art would be aware that similar problems exist.").

There is nothing in the nature of the conventional backerboard limitations, the teachings of the prior art, nor the knowledge of persons of skill in the art to suggest the desirability of the presently claimed invention. Thus, the present invention is novel and non-obvious over the cited references.

"There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper.). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999).

"In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification." *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972). Moore et al. is not such a reference, and, in fact, as described above teaches away from the present invention.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Korzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In *In re Korzab*, the claims were drawn to an injection molding method using a single temperature sensor to control a plurality of flow control valves. The primary reference disclosed a multizone device having multiple sensors, each of which controlled an associated flow control valve, and also taught that one *system* may be used to control a number of valves. The court found that there was insufficient evidence to show that one *system* was the same as one *sensor*. While the control of multiple valves by a single sensor rather than by multiple sensors was a "technologically simple concept," there was no finding "as to the specific understanding or principle within the knowledge of the skilled artisan" that would have provided the motivation to use a single sensor as the system to control more than one valve. 217 F.3d at 1371, 55 USPQ2d at 1318.

In *In re Fine*, the claims were directed to a system for detecting and measuring minute quantities on nitrogen compounds comprising a gas chromatograph, a converter which converts nitrogen compounds into nitric oxide by combustion, and a nitric oxide detector. The primary reference disclosed a system for monitoring sulfur compounds comprising a chromatograph,



combustion means, and a detector, and the secondary reference taught nitric oxide detectors. The examiner and Board asserted that it would have been within the skill of the art to substitute one type of detector for another in the system of the primary reference, however the court found there was no support or explanation of this conclusion and reversed.

In *In re Jones*, the claimed invention was the 2-(2-aminoethoxy) ethanol salt of dicamba, a compound with herbicidal activity. The primary reference disclosed *inter alia* the substituted ammonium salts of dicamba as herbicides, however the reference did not specifically teach the claimed salt. Secondary references teaching the amine portion of the salt were directed to shampoo additives and a byproduct of the production of morpholine. The court found there was no suggestion to combine these references to arrive at the claimed invention.

All of these cases are on-point with the present rejections of the Claims, and thus it is submitted that the amendments herein even further distinguish the present invention from the cited references.

Further, the teachings of Moore et al. conflict with Mathieu and Dinkel. The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art, and all teachings in the prior art must be considered to the extent that they are in analogous arts. Where the teachings of two or more prior art references conflict, the examiner must weigh the power of each reference to suggest solutions to one of ordinary skill in the art, considering the degree to which one reference might accurately discredit another. In *re Young*, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991) (Prior art patent to Carlisle disclosed controlling and minimizing bubble oscillation for chemical explosives used in marine seismic exploration by spacing seismic sources close enough to allow the bubbles to intersect before reaching their maximum radius so the secondary pressure pulse was reduced. An article published several years later by Knudsen opined that the Carlisle technique does not yield appreciable improvement in bubble oscillation suppression. However, the article did not test the Carlisle technique under comparable conditions because Knudsen did not use Carlisle's spacing or seismic source. Furthermore, where the Knudsen model most closely approximated the patent technique there was a 30% reduction of the secondary pressure pulse. On these facts, the court found that the Knudsen article would not have deterred one of ordinary skill in the art from using the Carlisle patent teachings.).

The mere fact that references *can* be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (Claims were directed to an apparatus for producing an aerated cementitious composition by drawing air into the cementitious composition by driving the output pump at a capacity greater than the feed rate. The prior art reference taught that the feed means can be run at a variable speed, however the court found that this does not require that the output pump be run at the claimed speed so that air is drawn into the mixing chamber and is entrained in the ingredients during operation. Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." 916 F.2d at 682, 16 USPQ2d at 1432.). See also *In re Frisch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992) (flexible landscape edging device which is conformable to a ground surface of varying slope not suggested by combination of prior art references).

A statement that modifications of the prior art to meet the claimed invention would have been "*well within the ordinary skill of the art* at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See also *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000) (Court reversed obviousness rejection involving technologically simple concept because there was no finding as to the principle or specific understanding within the knowledge of a skilled artisan that would have motivated the skilled artisan to make the claimed invention); *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999) (The level of skill in the art cannot be relied upon to provide the suggestion to combine references.).

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) (Claimed device was a blood filter assembly for use during medical procedures wherein both the inlet and outlet for the blood were located at the bottom end of the filter assembly, and wherein a gas vent was present at the top of the filter assembly. The prior art reference taught a liquid strainer for

removing dirt and water from gasoline and other light oils wherein the inlet and outlet were at the top of the device, and wherein a per-cock (stopcock) was located at the bottom of the device for periodically removing the collected dirt and water. The reference further taught that the separation is assisted by gravity. The Board concluded the claims were *prima facie* obvious, reasoning that it would have been obvious to turn the reference device upside down. The court reversed, finding that if the prior art device was turned upside down it would be inoperable for its intended purpose because the gasoline to be filtered would be trapped at the top, the water and heavier oils sought to be separated would flow out of the outlet instead of the purified gasoline, and the screen would become clogged.).

"Although statements limiting the function or capability of a prior art device require fair consideration, simplicity of the prior art is rarely a characteristic that weighs against obviousness of a more complicated device with added function." *In re Dance*, 160 F.3d 1339, 1344, 48 USPQ2d 1635, 1638 (Fed. Cir. 1998) (Court held that claimed catheter for removing obstruction in blood vessels would have been obvious in view of a first reference which taught all of the claimed elements except for a "means for recovering fluid and debris" in combination with a second reference describing a catheter including that means. The court agreed that the first reference, which stressed simplicity of structure and taught emulsification of the debris, did not teach away from the addition of a channel for the recovery of the debris.).

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.).

As altering any of the cited references to make them combinable as the Examiner has proposed would render them unsatisfactory for their intention purpose and change the principal of operation of them, as discussed above, it is respectfully submitted the present invention is patentable.

#### 4. Fees

No Claim fees are believed due. The number of Claims pending remains unchanged.

No extension of time fees are believed due. This *Response and Amendment* is being filed within six months of the *Office Action*, and more specifically within three months.

Nonetheless, should any fees be due, authorization to charge deposit account No. 20-1507 is hereby given.

### CONCLUSION

By the present *Response and Amendment*, the Application has been in placed in full condition for allowance. Accordingly, Applicant respectfully requests early and favorable action. Should the Examiner have any further questions or reservations, the Examiner is invited to telephone the undersigned Attorney at 404.885.2773.

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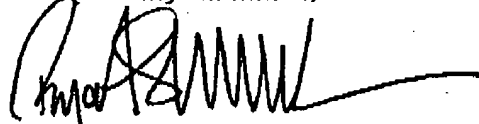
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